



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2022-1401; Project Identifier AD-2022-01017-E]

RIN 2120-AA64

Airworthiness Directives; General Electric Company Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for certain General Electric Company (GE) CF6-80E1A2, CF6-80E1A3, CF6-80E1A4, and CF6-80E1A4/B model turbofan engines. This proposed AD was prompted by a manufacturer investigation that revealed that certain compressor discharge pressure seals (CDP seals) and forward outer seals were manufactured from powder metal material suspected to contain iron inclusion. This proposed AD would require the replacement of the affected CDP seals and forward outer seals. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to [regulations.gov](https://www.regulations.gov). Follow the instructions for submitting comments.
- Fax: (202) 493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

AD Docket: You may examine the AD docket at [regulations.gov](https://www.regulations.gov) by searching for and

locating Docket No. FAA-2022-1401; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Alexei Marqueen, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7178; email: Alexei.T.Marqueen@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2022-1401; Project Identifier AD-2022-01017-E” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to regulations.gov, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public

docket of this NPRM. Submissions containing CBI should be sent to Alexei Marqueen, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA was notified by the manufacturer of the detection of iron inclusion in a turbine disk manufactured from the same powder metal material used to manufacture certain CDP seals and forward outer seals for GE CF6-80E1A2, CF6-80E1A3, CF6-80E1A4, and CF6-80E1A4/B model turbofan engines. Further investigation by the manufacturer determined that the iron inclusion is attributed to deficiencies in the manufacturing process. The investigation by the manufacturer also determined that certain CF6-80E1A2, CF6-80E1A3, CF6-80E1A4, and CF6-80E1A4/B CDP seals and forward outer seals made from billets manufactured using the same process may have reduced material properties and a lower fatigue life capability due to iron inclusion, which may cause premature fracture and uncontained failure. As a result of its investigation, the manufacturer published service information that specifies procedures for the removal and replacement of certain CDP seals and forward outer seals installed on CF6-80E1A2, CF6-80E1A3, CF6-80E1A4, and CF6-80E1A4/B model turbofan engines. This condition, if not addressed, could result in uncontained debris release, damage to the engine, and damage to the aircraft.

FAA's Determination

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

Related Service Information

The FAA reviewed GE CF6-80E1 Service Bulletin (SB) 72-0597 R00, dated August 5, 2022. This service information specifies procedures for removing the CDP seal and forward outer seal from service.

Proposed AD Requirements in this NPRM

This proposed AD would require the removal of certain CDP seals and forward outer seals from service and replacement with parts eligible for installation.

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 0 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Replace CDP seal	8 work-hours x \$85 per hour = \$680	\$154,768 (prorated)	\$155,448	\$0
Replace forward outer seal	8 work-hours x \$85 per hour = \$680	\$1,289,792 (prorated)	\$1,290,472	\$0

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national

government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

(1) Is not a “significant regulatory action” under Executive Order 12866,

(2) Would not affect intrastate aviation in Alaska, and

(3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

General Electric Company: Docket No. FAA-2022-1401; Project Identifier AD-2022-01017-E.

(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to General Electric Company CF6-80E1A2, CF6-80E1A3, CF6-80E1A4, CF6-80E1A4/B model turbofan engines with an installed:

(1) Compressor discharge pressure seal (CDP seal) with part number (P/N) 1669M73P02 and serial number (S/N) TMT1C0E1 or TMT1C0E2; or

(2) Forward outer seal with P/N 1778M70P03 and S/N NCU65340.

(d) Subject

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section; 7250, Turbine Section.

(e) Unsafe Condition

This AD was prompted by a manufacturer investigation that revealed that certain CDP seals and forward outer seals were manufactured from powder metal material suspected to contain iron inclusion. The FAA is issuing this AD to prevent fracture and uncontained failure of certain CDP seals and forward outer seals. The unsafe condition, if not addressed, could result in uncontained debris release, damage to the engine, and damage to the aircraft.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) At the next piece-part exposure after the effective date of this AD or before the affected CDP seal exceeds 6,400 cycles since new (CSN), whichever occurs first, remove the affected CDP seal from service and replace with a part eligible for installation.

(2) At the next piece-part exposure after the effective date of this AD or before the affected forward outer seal exceeds 5,400 CSN, whichever occurs first, remove the affected forward outer seal from service and replace with a part eligible for installation.

(h) Definitions

(1) For the purpose of this AD, a “part eligible for installation” is a CDP seal that does not have P/N 1669M73P02 and S/N TMT1C0E1 or S/N TMT1C0E2, and a forward outer seal that does not have P/N 1778M70P03 and S/N NCU65340.

(2) For the purpose of this AD, “piece-part exposure” is when the affected part is removed from the engine.

(i) Installation Prohibition

After the effective date of this AD, do not install a CDP seal with P/N 1669M73P02 and S/N TMT1C0E1 or S/N TMT1C0E2, or a forward outer seal with P/N 1778M70P03 and S/N NCU65340, onto any engine.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (k) of this AD and email to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(k) Related Information

For more information about this AD, contact Alexei Marqueen, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7178; email: Alexei.T.Marqueen@faa.gov.

(l) Material Incorporated by Reference

None.

Issued on October 24, 2022.

Christina Underwood, Acting Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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